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ABSTRACT

Jacob Fried and Paul Molnar developed a model to simulate the interaction between technological change and social interaction which consists of two zones: (1) task requisites; and (2) the corresponding organizational responses. To define task requisites for library collections, it is necessary to identify the dimensions of the problem and the modifications necessary to facilitate the completion of the product; including a clientele survey, definition of collection standards, subject limitations, media formats, availability of materials, selection criteria, and available energy, control policy, and time and space limitations. Each of these components can be assigned a value according to the amount of constraint. The resulting coefficient for task requisites can then be compared to that of the organizational response patterns to determine which policies are warranted. (EMH)

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The Fried Transdisciplinary Model of Technological and Social Organization Applied to the Library's Institutional Organization of the Collection Establishment, Development, Maintenance, and Monitoring Process

An Operational Systems Approach for Diagnosing, Measuring, Evaluating, and Designing Improvements in Library Collection Building Organizational Policies and Practices

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Principles of Materials Selection
Course Supplement

Abraham Kaplan, in The Conduct of Inquiry; Methodology for Behavioral Science (San Francisco, Cal., Chandler Pub. Co., 1964, p. 25), stated that "excessive effort can be diverted from substantive to methodological problems, so that we are forever perfecting how to do something without ever getting around to doing it even imperfectly." We might well heed Kaplan's words with respect to the "how" of collection development. On the other hand, we need not feel that we must bring to a halt all efforts toward improving the "how" of this major process. The Fried Transdisciplinary Model of Technological and Social Organization can be of great assistance in the task.

Jacob Fried and Paul Molnar constructed "A General Model for Culture and Technology" (Technological Forecasting and Social Change, vol. 8, 1975, pp. 175-188). Fried presented a simplified version, "A Transdisciplinary Model of Technological and Social Organization," at the 1976 Annual North American Meeting of the Society for General Systems Research. Using the

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simplified model as a guide, building a library collection may be viewed in terms of the TASK REQUISITES (1, 2, 3) and the corresponding ORGANIZATIONAL RESPONSES (1, 2, 3) of the library in carrying out the tasks. Organization comes about by imposing constraint on the interacting elements that are part of an ongoing process. When some variables increase or decrease in degree of constraint and fail to produce resonant changes in the others, non-viability or less effectiveness in undertakings results. Analysis of the degrees of constraint imposed on the interacting elements within and between both zones (TASK REQUISITES and ORGANIZATIONAL RESPONSES) is a helpful before-after measure in determining an initial and final organizational state, as well as toward specifying which variables need to be manipulated to accomplish a desired outcome and successfully cope with change.

TASK REQUISITES

Each of the two zones has three components, or minimal analytic units that establish an organizational pattern of constraint. The first zone is TASK REQUISITES. Task requisites are measured by analysis of the degrees of constraint imposed on the interacting elements. Each zone has three components. Constraint may be measured on a scale: L-Low, ML-Medium-Low, M-Medium, MH-Medium-High, H-High. The value assigned to each component, or variable, derives from the empirical situation being described - collection development in the particular library in question. It is not derived from a pre-determined

absolute scale. The zone, TASK REQUISITES, has the following three components, paraphrased from the "Transdisciplinary Model":

(1) Dimensional: What are the size, quantity, physical characteristics, or qualitative conditions that describe the desired end results (goals and objectives fulfillment) or products (order list sent to a vendor)?

Desired end results of the library's collection might be described as follows: a collection built according to the objectives of the library and the philosophy of library service in use at the time, the objectives of any institution to which the library is attached, and the present collection development goals and selection policies, written or unwritten.

Note: Philosophy of library service is the major consideration, for it bears on how active or passive the librarian is in creating demand and interpreting the collection through general and tailored reader services.

(2) Modification: What processes must be carried out on elements, behaviors, factors, and "raw" materials before useable finished products or ends result?

"Elements, behaviors, factors, and raw materials" for building library collections might be grouped into the following seven categories:

(a) Study of the user and non-user, or community study ("community" taken in the largest sense to include clientele and potential clientele of all types of libraries). Assessment of user and non-user characteristics, interests and levels,

needs, demands - all of which may be articulated on the part of the user, not articulated, or the user or potential user may be unaware of his/her needs.

Establishment of user profiles and priorities.

Identification of social factors affecting individuals and groups, such as economic, sociological (including privacy and freedom of information), technological, educational, psychological, and legal factors.

Attention to use pattern studies of user preferences and habits with direct feedback from users.

Consideration of other sources that fulfill needs of any kinds through print/nonprint formats.

Utilization of such statistical measures as price indexes, allocation formulas, and past circulation (deviation of subject circulation from the mean circulation for the subjects in question, optimal per student acquisition expenditure to yield maximum benefits in terms of use of materials, and the identification of core collections based on use).

(b) Collection standards, requirements, and policy statements.

Standards may be national, state, local, or associated with accreditation.

Requirements may include such stipulations as those set forth in receiving federal funds, for example, that media purchased be listed in certain selection aids.

Present collection development or selection policy statements must receive major, ongoing attention, with revision as

needed.

(c) Subject areas, and, more narrowly, subject fields and subfields: their scope, characteristics, structure, research fronts and methodology, interdisciplinary relationships, and intellectual content.

Analysis of the formal characteristics of the literature through bibliometric measures of its creation, growth, obsolescence, dissemination, utilization - the whole network of authorship and publication.

Identification of the core of the subject and its literature, including correspondence to library use of patrons, through application of such devices as Bradford's and Zipf's laws, citation tracing, and bibliographic coupling; analysis of title dispersion, subject dispersion, time span, language distribution, and form (journal articles, etc.); and Goffman's epidemic analysis by which need can be predicted.

Structure of the published products of the field, including level and occupational groups served.

Structure of the bibliographical control of the field. Systematization of published knowledge.

Note: It is important to be aware that there is relatively little consensus about the structure of the various established and emerging subject areas, fields, and subfields and relatively little solid proof concerning the sound applicability of bibliometric measures to the analysis of subject literatures. How knowledge originates, develops, spreads, and forms new paradigms is a field in itself that appears to be attracting more

and more attention yet that is still in its early stages.

It is also important to realize that bibliographic control of the various fields, including selection aids, is uneven in its effective representation of the fields and their interrelationships.

Philosophy of library service is extremely important here. Dependence on past use for predicting future use suggests a passive role on the part of librarians. An active role for the librarian requires the creation of demand and building a collection to serve a dynamic program of reader awareness services fed directly into established, ongoing individual and group contacts with various users.

(d) Media formats: the seemingly endless array of books, state-of-the-art reviews, proceedings, pamphlets, newspapers, periodicals, serials, indexes, abstracts, reference works, patents, trade catalogs, trade directories, annual reports, standards and specifications, rare books, out-of-print books, reprints, archives, manuscripts, technical and other research reports, foreign material, microform, UN and other government publications, translations, nonbook formats (maps, photographs, realia, slides, audiorecords, etc.), exhibition catalogs, newsletters, digests, loose leaf binders containing articles on current topics, conference publications, photocopies, data bases, referral sources, anthologies, and collections.

(e) Availability of materials (media, resources) both to the library and to the user elsewhere than the library:

Publishing trends, the knowledge industry, book-nonbook

clubs, reprint and reformat rights, mass media, mass market paperbacks, quality material (physical, content), awards and prizes.

Sources of media: publishers (trade, association, organizations, institutions, institutes, small presses, government, university presses, free and inexpensive markets, private presses).

Publishers' representatives, remainder markets, retail trade, agents, blanket orders, approval plans, rental plans, package collections on particular subjects, multimedia or book core collections, special plans for obtaining foreign material.

Gifts, exchange (U.S. Book Exchange, other arrangements).

Networking, consortia, cooperatives, resource sharing, interlibrary loan.

(f) Selection criteria for all media formats: subject content, technical (quality of color reproduction, etc.)

Note: It is important to accept the reality that librarians cannot be subject specialists in every subject. This does not obviate the general usefulness, however, of familiarity with selection criteria.

(g) Bibliographical control outputs useful as selection aids: review media, national and trade bibliography, guides to literature, bibliographies, bibliographies of bibliographies, indexes, abstracts, citation lists, special issues of journals, bibliographic essays in journals, core collections, published library catalogs, standard catalogs, books-in-print

lists.

The above may be enumerative, annotated, current, retrospective, cumulative, selective, non-selective, general, specialized by subject or clientele.

(3) Space/Time: How many space and time conditions must be coordinated to bring all needed elements, behaviors, factors, and "raw" materials together?

Distance from sources of media.

Time by which media are needed.

Time required to obtain media.

Distance from users.

ORGANIZATIONAL RESPONSES

The second zone, ORGANIZATIONAL RESPONSES, also has three components. Organizational capacity for response is measured by analysis of the degrees of constraint imposed on the interacting elements. Following are the three components of the ORGANIZATIONAL RESPONSES zone:

(1) Available energy (action units): the effectiveness of the system in terms of consumption of energy to produce outputs (Operational level): What are the organizational characteristics (number and kind) of the internally differentiated units through which energy is available that is channeled into work or activity? Single, multiple, homogeneous, or heterogeneous? (Units may be men, tools, machines, resources.)

Staff: number, units or groupings, capabilities and abilities, in-service training, environmental working conditions.

Equipment.

Library budget; other sources of funds.

(2) Control (Policy level): What kinds of managing formats are available to program the activities of the action units that provide and channel energy? (Elaboration of organizational formats when tasks require more complex coordination, a greater amount of managerial intervention.)

Administrative, managerial, systems, and network authority structure.

Psychological contracts involved (how positive, supportive?)

Professional association activity (as working with publishers, editors, authors to obtain needed bibliographical control and improved selection aids, or gathering information in a comparable form for distribution among libraries).

(3) Boundary: What are the limits of time and space within which the available "programs" of activities of the action units are effected? (Including scheduling.)

Staff time in available working hours.

Physical space in the library.

Time of those who must be consulted.

Distance from those who must be consulted.

Communication devices, techniques, technologies: Telex, computer, bookmobile, mail order, rotating collections.

SUMMARY

Each component in the TASK REQUISITES and the ORGANIZATIONAL RESPONSES zones can be assigned a measure as indicated above

according to the amount of constraint involved to determine the ongoing condition. What kinds and degrees of constraint or lack of constraint are required in ORGANIZATIONAL RESPONSES to cope with particular kinds and degrees of constraint in TASK REQUISITES for specified types of library situations? Constraint has to do with complexity, routine scheduling, lack of randomness, number of multiple units non-interchangeable in action, completion of tasks requiring actions spread over space and time sequentially, multiple sources of inputs, etc. What changes are required in which components of both zones to effect needed improved outcomes in collection development effectiveness and efficiency? What alternatives are open for engineering the changes?

The magnitude of the TASK REQUISITES zone as compared with traditional ORGANIZATIONAL RESPONSES patterns suggests that collection development functions may require major reassessment and handling. It suggests, too, a new paradigm of philosophy of library service and relationship to clientele, with a greater advocacy role on behalf of clientele to facilitate production and distribution of needed materials and information.

Fried and Molnar have made a distinct contribution to General Systems Theory through their general model for culture and technology. This model, when applied to the complex process of collection building, enables the collection development librarian to analyze the complex process in a way to see all the interactions involved. The model is a tool for diagnosis and

improvement of current collection building activity that provides a direction and a "coping" that perhaps have never before supported this activity.